Notes on the structure and plumage of Beesley's Lark *Chersomanes* [*albofasciata*] *beesleyi*

Paul F. Donald[a] *and Nigel J. Collar*[b]

Notes sur la structure et le plumage de l'Alouette de Beesley *Chersomanes* [*albofasciata*] *beesleyi*. L'Alouette de Beesley *Chersomanes* [*albofasciata*] *beesleyi*, un taxon très rare et en diminution, confiné au nord de la Tanzanie, a été séparée de l'Alouette éperonnée *C. albofasciata*, qui se trouve principalement en Afrique australe, dans le *Handbook of the Birds of the World,* Vol. 9 (2004). Ce traitement est basé sur des différences génétiques non publiées, un dimorphisme sexuel plus marqué, une poitrine plus fortement striée, un comportement différent (hochements de queue) et une taille plus petite. Nous avons examiné cinq spécimens (quatre mâles, une femelle) de *beesleyi* et un grand nombre des différentes sous-espèces de *C. albofasciata* d'Afrique australe. Les stries sur la poitrine sont toujours bien marquées chez *beesleyi*, mais c'est un caractère qu'on retrouve chez certains individus des races australes, surtout dans le nord. La taille de *beesleyi* est certes petite, mais il y a chevauchement de tous les caractères mesurés avec ceux de *C. albofasciata*. En plus, les hochements de queue ont été observés chez *C. albofasciata*. Nous recommandons une évaluation plus sérieuse du statut de la forme *beesleyi* mais suggérons que, quoiqu'en soit le résultat, la conservation de ce taxon biogéographiquement intéressant et fortement menacé doit être prioritaire.

Summary. Beesley's Lark *Chersomanes* [*albofasciata*] *beesleyi*, a very rare and declining taxon confined to northern Tanzania, was separated in Vol. 9 of *Handbook of the Birds of the World* (2004) from the largely southern African Spike-heeled Lark *C. albofasciata* on account of unpublished genetic differences, a higher degree of sexual dimorphism, heavier breast streaking, different behaviour (tail-cocking) and smaller size. We examined five specimens (four male, one female) of *beesleyi* and many more of various races of *C. albofasciata* from across southern Africa. Breast streaking was consistently marked in *beesleyi* but matched in some instances by southern African taxa, particularly in the northern part of that range, while size was small but within the overall range of *albofasciata* in all of the characters measured. Moreover, tail-cocking has been recorded in *albofasciata*. We urge fuller assessment of the status of *beesleyi* but suggest that, whatever the outcome, the conservation of this biogeographically interesting and highly threatened taxon merits high priority.

Spike-heeled Lark *Chersomanes albofasciata* is largely confined to southern Africa, from Angola and Botswana south through Namibia to the Cape. The species is variable in size and plumage, and many subspecies have been proposed—up to 16 in Clancey (1980)—although this number was reduced to ten in *Birds of Africa* (Keith *et al.* 1992). The same ten subspecific divisions were followed by *Handbook of the Birds of the World* (*HBW*; de Juana *et al.* 2004) and *Roberts* (Hockey *et al.* 2005). There is a single specimen record (omitted from *Birds of Africa* but included in *HBW*), a bird collected from the Kundelungu plateau in Congo-Kinshasa, currently unassigned to subspecies (Schouteden 1969, Lippens & Wille 1976), and a debated sight record from Amboseli, Kenya (*HBW*; Turner 1985). The various subspecies range from dark-backed races with rich rufous-brown underparts and ear-coverts, such as *C. a. obscurata* of Angola, to pale-backed races that have the underparts only faintly suffused pale buff, such as *C. a. kalahariae* of southern Botswana (Fig. 1). Such conspicuous variation in plumage tones within a relatively small area is not unusual in certain larks, which respond to local variation in the colour of the substrate they occupy (*HBW*). *Roberts* notes that Spike-heeled Lark 'exhibits considerable fine-scale geographic variation in plumage colouration linked to soil colour and vegetation density', that differences among many contiguous subspecies are 'broadly clinal' and that more study might further reduce the number of recognised subspecies.

On 2 November 1965, J. S. S. Beesley collected a lark from the Masai Plains (Angyata Osugat), some 40 km north of Arusha, northern Tanzania, nearly 2,000 km outside what was then the known range of Spike-heeled Lark. The specimen was described by Benson (1966) as a new subspecies, *Chersomanes albofasciata beesleyi*,

Figure 1. Range of upperpart coloration in *Chersomanes* larks. From left: *C. albofasciata kalahariae*, *C. a. alticola*, *C. a. bradfieldi*, *C.* [*a.*] *beesleyi* (type specimen) and *C. a. obscurata* (P. F. Donald, © Natural History Museum)

Variations dans la couleur des parties supérieures chez les alouettes du genre *Chersomanes*. De gauche à droite : *C. albofasciata kalahariae*, *C. a. alticola*, *C. a. bradfieldi*, *C.* [*a.*] *beesleyi* (spécimen type) et *C. a. obscurata* (P. F. Donald, © Natural History Museum)

in honour of its discoverer. In his description, Benson noted 'upperside most similar to *C. a. obscurata* (Hartert), but much less dark, blackish-brown rather than near jet-black . . . nape and margins on crown whitish rather than reddish, the uppertail coverts slightly paler red. On underside, dusky streaking on chest more pronounced than in any other subspecies; in tone of russet on lower chest to abdomen much paler than *obscurata*, nearest to *C. a. kalahariae* (Ogilvie-Grant) and *erikssoni* (Hartert).' Benson further noted that his specimen 'seems also to be unusually small (wing 80 mm only), White (1961) giving the wing-length of the male of two other subspecies, *obscurata* and *C. a. boweni* (de Schauensee), as respectively 81–89 and 81–91 mm'. This furnished the basis of the form's description in *Birds of Africa*, in which *C. a. beesleyi* was retained as a subspecies.

However, the account of the family Alaudidae in *HBW* elevated *beesleyi* to a full species, Beesley's Lark *C. beesleyi*, an arrangement also adopted by at least one field guide (Sinclair & Ryan 2003) and one world checklist (Clements 2007). The rationale for treating *beesleyi* as a full species was given in *HBW* as (1) hitherto unpublished work showing it to be genetically distinct from *C. albofasciata*, (2) a degree of sexual plumage dimorphism (not apparently shown in other races of *C. albofasciata*), females being 'more richly rufous on belly' and having 'fewer, bolder breast streaks', (3) heavier breast streaking, (4) different behaviour and (5) smaller size. The last of these characters is reflected in the alternative common name given in *HBW*, 'Pygmy Spike-heeled Lark' although, as *HBW* was the first authority to separate *beesleyi* as a species, it is unclear where this name was previously used. Almost immediately, doubts were expressed about the validity of elevating *beesleyi* to species level (Irwin 2005) and BirdLife International continues to recognise *beesleyi* as a subspecies of Spike-heeled Lark, so the form is not listed separately on the IUCN Red List. Careful assessment of the taxonomic status of *beesleyi* is important because it is extremely rare, occupies a very small range (confined to the 'Longido Game Controlled Area': Baker & Baker 2002), and is apparently declining in numbers, making it one of Africa's most threatened bird taxa (*HBW*); yet nothing so far has been published that quantifies and / or verifies the characters itemised in *HBW* as supporting its specific status.

Specimen evidence

We examined specimens of *Chersomanes* larks in the Natural History Museum (NHM), Tring, UK. Only five skins of *beesleyi* were available to us, four males (including the type) and a female; those specimens other than the type were collected by A. D. Forbes-Watson in April 1966. Larger numbers of specimens of most subspecies of Spike-heeled Lark recognised by *Birds of Africa* and *HBW* were available for comparison. Of the five characters listed in *HBW* for regarding *beesleyi* specifically, we comment on three. The genetic work is currently unpublished, and the presence of only a single female *beesleyi* in NHM made quantitative assessment of sexual plumage dimorphism impossible, although this bird did not appear to differ greatly in breast streaking or underpart coloration from the males (Fig. 2).

Breast streaking.—Benson (1960) correctly pointed out that *beesleyi* shows more pronounced breast streaking than any other subspecies, and this is given as a salient feature in *HBW*. All five specimens of *beesleyi* in the NHM show clear breast streaking,' which is generally less obvious or completely absent in specimens of the southern races of *C. albofasciata* examined. However, variation is high and individuals of

Figure 2. Underparts of the five specimens of *Chersomanes* [*albofasciata*] *beesleyi* in the Natural History Museum (Tring), four males on left, single female on the right (P. F. Donald, © Natural History Museum)

Parties inférieures de cinq spécimens de *Chersomanes* [*albofasciata*] *beesleyi* du Natural History Museum (Tring), à gauche quatre mâles, à droite une femelle (P. F. Donald, © Natural History Museum)

Figure 3. Range of breast streaking in *Chersomanes* larks. The left-hand two birds are *C.* [*albofasciata*] *beesleyi* showing the least and most heavily streaked birds of the five available, then the most heavily streaked examples in the collection of NHM (Tring) of *C. a. kalahariae*, *C. a. alticola* and *C. a. obscurata* (P. F. Donald, © Natural History Museum)

Variations dans l'importance des stries sur la poitrine des alouettes du genre *Chersomanes*. Les deux oiseaux à gauche sont *C.* [*albofasciata*] *beesleyi* avec le moins et le plus de stries des cinq spécimens présents, suivis des exemplaires les plus striés de la collection du NHM (Tring) de *C. a. kalahariae*, *C. a. alticola* et *C. a. obscurata* (P. F. Donald, © Natural History Museum)

some subspecies, such as *C. a. alticola*, *C. a. kalahariae* and *C. a. obscurata*, can occasionally exhibit breast streaking comparable in extent

Figure 4. Spike-heeled Lark *Chersomanes albofasciata*, Etosha National Park, Namibia, December 2010, presumed to be of the race *boweni*, showing prominent breast streaking (P. F. Donald)

Alouette éperonnée *Chersomanes albofasciata*, présumée de la sous-espèce *boweni*, ayant des stries bien marquées sur la poitrine, Parc National d'Étosha, Namibie, décembre 2010 (P. F. Donald)

to that of *beesleyi* (Fig. 3). In December 2010, PFD observed a number of Spike-heeled Larks, presumably of the race *boweni*, in Etosha National Park, northern Namibia, and recorded prominent breast streaking in several of them (Fig. 4). These more heavily streaked races are among the more northerly of the southern African populations, suggesting that the degree of breast streaking might be related to latitude: while breast streaking is most frequent and pronounced in *beesleyi*, it is certainly not unique to this form and may be clinal. If, as seems likely, *beesleyi* represents a relic from a time when *C. albofasciata* or its ancestors were more widespread in Africa, originally clinal variation in a feature like breast streaking might misleadingly appear, with the disappearance of the intermediate forms, as a step change.

Size.—Benson (1960) again correctly pointed out that *beesleyi* is small, noting that the type is smaller than *C. a. obscurata* and *C. a. boweni*. With only four male *beesleyi* specimens available, and equally small sample sizes for several other taxa, statistical testing of differences in size was not appropriate. Nevertheless, visual plots of the measurements taken provide no evidence that *beesleyi* falls outside the size range of *C. albofasciata* (Fig. 5). In all measurements (bill to skull, wing-chord, tarsus, tail and the length of the spike on the hindclaw, all measured with dial callipers to 0.1 mm by PFD), *beesleyi* overlaps one or more

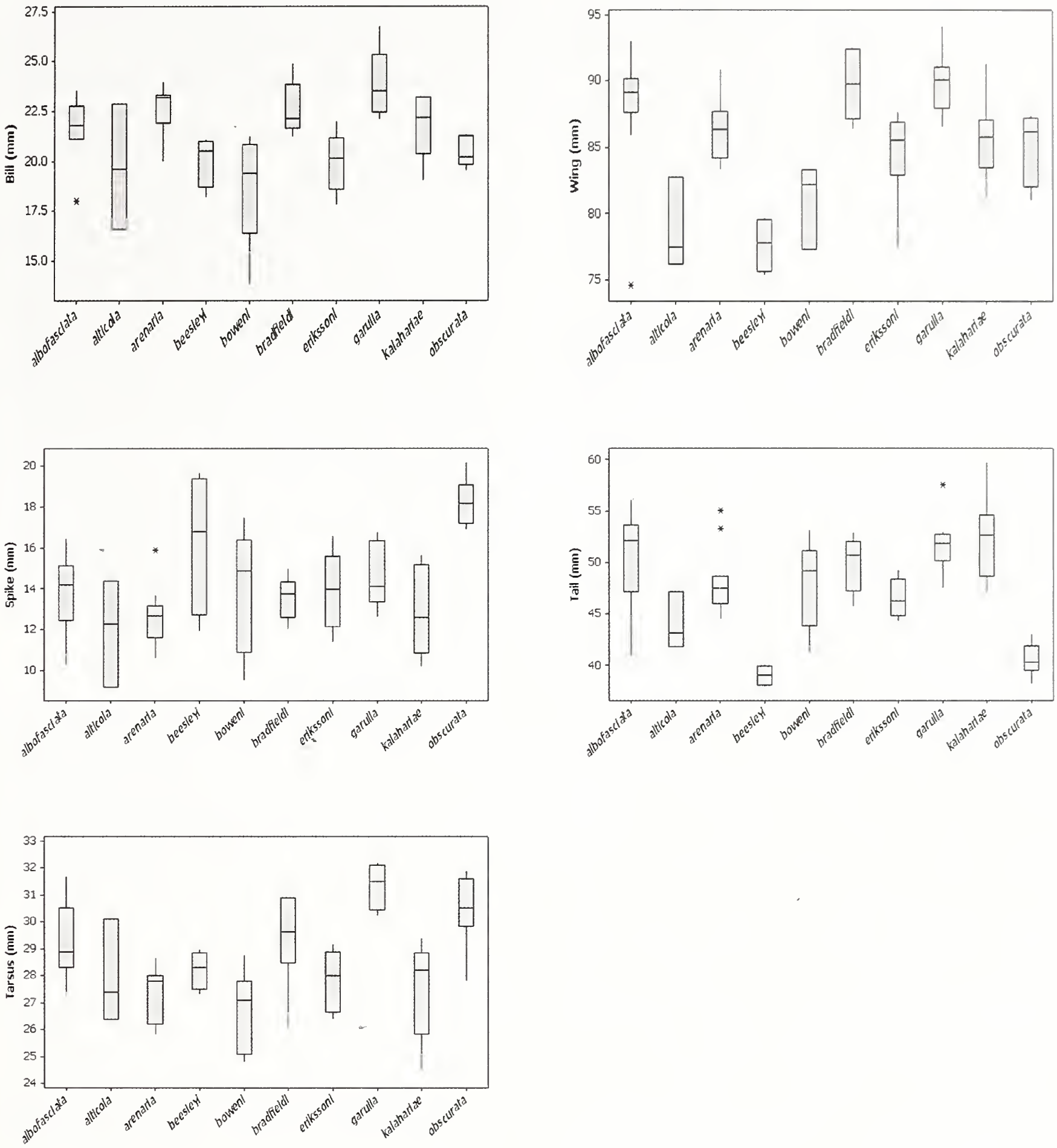

Figure 5. Boxplots of measurements of nine subspecies of Spike-heeled Larks *Chersomanes albofasciata* and *C.* [*a.*] *beesleyi* of northern Tanzania, arranged alphabetically. Only males were included because of significant sexual size dimorphism. All measurements are in mm. The horizontal line in each box represents the median, the box itself represents the interquartile range, the 'whiskers' the highest and lowest data values within the upper and lower limits, and the asterisks outliers. Sample sizes are 12 (*albofasciata*), 3 (*alticola*), 11 (*arenaria*), 4 (*beesleyi*), 7 (*boweni*), 6 (*bradfieldi*), 8 (*erikssoni*), 8 (*garulla*), 9 (*kalahariae*) and 6 (*obscurata*), respectively.

Mensurations de neuf sous-espèces de l'Alouette éperonnée *Chersomanes albofasciata* et de *C.* [*a.*] *beesleyi* du nord de la Tanzanie, par ordre alphabétique. Seules des mâles ont été utilisés à cause du dimorphisme sexuel prononcé de la taille. Toutes les mensurations sont en mm. La ligne horizontale dans chaque bloc représente la valeur médiane, le bloc lui-même représente l'écart interquartile, les lignes les valeurs les plus hautes et les plus basses dans les limites supérieures et inférieures, et les astérisques les valeurs hors normes. Nombre d'échantillons : 12 (*albofasciata*), 3 (*alticola*), 11 (*arenaria*), 4 (*beesleyi*), 7 (*boweni*), 6 (*bradfieldi*), 8 (*erikssoni*), 8 (*garulla*), 9 (*kalahariae*) et 6 (*obscurata*), respectivement.

of the southern races of *C. albofasciata* or falls entirely within the overall range of that species. Bill length and tarsus length of *beesleyi* fall towards the centre of the range of variation shown by the southern subspecies of *C. albofasciata*. Wing length of *beesleyi* is similar to that of *C. a. alticola* (north-east South Africa) and overlaps with *C. a. boweni* (north-west Namibia and Angola) and *C. a. erikssoni* (north-east Namibia and Angola). The hindclaw spike length of *beesleyi* falls towards the upper end of variation in *Chersomanes* larks, although spike length is a character known to vary with the nature of the preferred vegetation (Green *et al.* 2009) and therefore may not be a useful taxonomic feature. Only on tail length does *beesleyi* stand out as being particularly small, but even this character overlaps with *C. a. obscurata*. In bill, tail and spike length, *beesleyi* is most similar to *C. a. obscurata*, the most northerly of the southern subspecies of *C. albofasciata* and the closest geographically to *beesleyi*.

While *beesleyi* is clearly not uniquely small in the range of variation exhibited by *C. albofasciata*, it certainly falls towards the lower end of the range of sizes exhibited, particularly in tail length. Such a pattern would be expected under Bergmann's Rule, which states that intraspecific body size increases with latitude, probably as a response to decreasing temperatures. Bergmann's Rule has considerable empirical support (e.g., Ashton 2002) and would predict that *beesleyi* should fall towards the lower end of the variation in size. Body size, therefore, does not necessarily lend support to the specific treatment of *beesleyi* since other reasons for its variation are possible.

Behaviour.—Claimed differences in behaviour between *beesleyi* and southern forms of *C. albofasciata* appear to be limited to tail-cocking, reported to be frequent in *beesleyi* and absent in all forms of *C. albofasciata* (*HBW*). However, these differences have not been quantified nor have any details been published, and *C. albofasciata* does at least occasionally cock its tail, particularly during sexual display (C. N. Spottiswoode *in litt.* 2009). Until field studies have been undertaken to quantify any difference, it should perhaps best be disregarded in assessments of the taxonomic status of *beesleyi*.

Conclusion

The rationale for elevating *beesleyi* to specific status therefore appears to require a more thorough presentation of the evidence. This should include an assessment of variation in songs and calls (*HBW* suggests that these are at least similar to those of Spike-heeled Lark), detailed behavioural observations and published estimates of genetic distances between *beesleyi* and all of the various races—especially *obscurata*—of *C. albofasciata* (although genetic distance alone may be deemed insufficient to diagnose specific status: Tobias *et al.* 2010). Whatever the outcome, every effort should be made to conserve the small and highly threatened population of *beesleyi* in northern Tanzania, since it unquestionably represents a distinctive and biogeographically interesting taxon (although it is also worth mentioning that renewed surveys in adjacent areas may produce new populations, as the region is generally poorly known ornithologically: M. P. S. Irwin *in litt.* 2010).

Acknowledgements

We are grateful to the staff of the Natural History Museum (Tring) for permitting access to the collection and for other assistance, to Michel Louette for providing further information on the specimen from Congo-Kinshasa, to Claire Spottiswoode and Lincoln Fishpool for advice and comments on this note prior to submission, and to Michael Irwin, Neil Baker and Peter Lack for their comments as referees.

References

Ashton, K. G. 2002. Patterns of within-species body size variation of birds: strong evidence for Bergmann's Rule. *Global Ecol. Biogeogr.* 11: 505–523.

Baker, N. E. & Baker, E. M. 2002. *Important Bird Areas in Tanzania: A First Inventory.* Dar es Salaam: Wildlife Conservation Society of Tanzania.

Benson, C. W. 1966. The Spike-heeled Lark *Chersomanes albofasciata* in East Africa. *Bull. Br. Ornithol. Cl.* 86: 76–77.

Clancey, P. A. (ed.) 1980. *SAOS Checklist of Southern African Birds.* Pretoria: Southern African Ornithological Society.

Clements, J. F. 2007. *The Clements Checklist of Birds of the World.* Sixth edn. Ithaca, NY: Cornell University Press.

Green, R. E., Barnes, K. N. & Brooke, M. de L. 2009. How the longspur won its spurs: a study of claw

and toe length in ground-dwelling passerine birds. *J. Zool.* 277: 126–133.

Hockey, P. A. R., Dean, W. R. J. & Ryan, P. G. 2005. *Roberts—Birds of Southern Africa*. Seventh edn. Cape Town: Trustees of the John Voelker Bird Book Fund.

Irwin, M. P. S. 2005. Book review: *Handbook of the Birds of the World*, Vol. 9. *Honeyguide* 51: 77–78.

de Juana, E., Suárez, F. & Ryan, P. G. 2004. Family Alaudidae (larks): family introduction. In del Hoyo, J., Elliott, A. & Christie, D. A. (eds.) *Handbook of the Birds of the World*. Vol. 9. Barcelona: Lynx Edicions.

Keith, S., Urban, E. K. & Fry, C. H. (eds.) 1992. *The Birds of Africa*. Vol. 4. London, UK: Academic Press.

Lippens, L. & Wille, H. 1976. *Les Oiseaux du Zaire*. Tielt: Lannoo.

Ryan, P. G. 2004. Beesley's Lark *Chersomanes beesleyi*. In del Hoyo, J., Elliott, A. & Christie, D. A. (eds.) *Handbook of the Birds of the World*. Vol. 9. Barcelona: Lynx Edicions.

Sinclair, I. & Ryan, P. 2003. *Birds of Africa South of the Sahara*. Cape Town: Struik.

Schouteden, H. 1969. Note sur trois oiseaux du Katanga. *Rev. Zool. Bot. Afr.* 80: 308–310.

Tobias, J. A., Seddon, N., Spottiswoode, C. N., Pilgrim, J. D., Fishpool, L. D. C. & Collar, N. J. 2010. Quantitative criteria for species delimitation. *Ibis* 152: 724–746.

Turner, D. A. 1985. On the claimed occurrence of the Spike-heeled Lark *Chersomanes albofasciata* in Kenya. *Scopus* 9: 142.

[a] *RSPB, The Lodge, Sandy, Bedfordshire SG19 2DL, UK. E-mail: paul.donald@rspb.org.uk*

[b] *BirdLife International, Wellbrook Court, Girton, Cambridge CB3 0NA, UK. E-mail: nigel.collar@birdlife.org*

Received 22 October 2010; revision accepted 10 December 2010.